PUBLIC HEALTH REPORT

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The Control of Rubella In California

LIVE RUBELLA VIRUS VACCINE was first licensed for use in the United States in June 1969 and has been in extensive use in California for approximately one year. As of March 1971, more than one million children in California have received the vaccine, and 35 of California's 58 local health jurisdictions have conducted intensive rubella immunization activities.

To date, the use of the vaccine nationally has been somewhat more intensive than in California. Four states have immunized 80 percent or more of their one- through eleven-year-old populations, and 28 million doses of the vaccine have been distributed throughout the United States.[1] This backlog of experience permits some review of the recommendations for use of the vaccine and some comments on the questions about the vaccine that are most frequently asked.

The Approach to Vaccine Use

Three approaches are advocated for the effective control of rubella through immunization. They are: 1) immunization of all children from age one through eleven years, 2) immunization of adolescent girls, age 11 through 13 years, 3) immunization of rubella-susceptible women in the childbearing ages. A brief discussion of each approach is necessary to view in proper perspective the current Rubella Control Program in California. The recommendations jointly agreed upon by the California Medical Association and the State Department of Public Health in consultation with local health officers provide a framework in which each of these approaches may be pursued concurrently.[2]

1. Since children constitute the major source for spread of rubella infection to susceptible pregnant women, effective control of the rubella problem can be achieved by eliminating or significantly reducing the transmission of virus in the pediatric population. The vaccine has been shown to be safe and protective for children. Programs in other areas of the United States have shown that 80 to 90 percent of children can be immunized in community sponsored campaigns in a relatively short period. At present, this approach is the only feasible method to achieve the rapid immunization of a sufficient proportion of the population for effective control of the rubella problem within the next year or two. Furthermore children are easily reached by immunization programs. Principally for these two reasons public programs have placed primary emphasis on this approach.

2. The immunization of all girls aged 11 through 13 years, that is, the group just before the childbearing ages, can reduce the incidence of congenital rubella syndrome infants when these girls reach their childbearing period, about five to ten years from now. However, this approach can have virtually no immediate impact and would not prevent the anticipated epidemic of rubella which is forecast for the early 1970's.

3. Within the framework of the joint recommendations for rubella vaccine use, developed by the California Medical Association and the State Health Department, the immunization of women in the childbearing age group is recommended. It is not known whether the vaccine virus itself may cause fetal damage, but this risk must be assumed if given to a rubella-susceptible woman during pregnancy. Women should be considered for immunization on an individual basis and only if appropriate measures are taken to avoid administration of vaccine shortly before or during pregnancy. The necessity of avoiding inadvertent immunization of women shortly before or during pregnancy precludes the development of public programs which could reach large numbers of women in a short period.[3] Considerable time and

effort would be needed to achieve significant reductions in the incidence of congenital rubella syndrome infants if this were the only approach used.

Comments on Questions About the Vaccine

Vaccine Reactions. Experience since licensure has indicated that transient joint pain and related complaints such as numbness and paresthesia in an extremity are the most troublesome of the vaccine-associated reactions.[4] The national experience in this regard is consistent with that in California. Continuing experience has confirmed that the frequency of such complaints is higher in women over the age of 25 years than in children, and is higher in those receiving the vaccine strain produced in dog kidney cell culture than with the strains grown in duck embryo or rabbit kidney cell culture.

Virus "Shedding" and Communicability. The consistent appearance of rubella vaccine virus in the pharynx of susceptible vaccinees can be demonstrated by the use of sensitive isolation techniques. This has raised the question that some hazard of transmission of the virus to susceptible pregnant women might exist. Both before and after licensing, studies have been conducted to explore the possibility of rubella vaccine virus transmission under a variety of circumstances—for example, institutionalized child to child, institutionalized adult to adult, household sibling to sibling, child to mother, mother to infant, and classmate to classmate in schools.[5] The most recent study of this type, reported by Scott and Byrne,[6] involved 121 rubella-susceptible pregnant women who were carefully followed by serological testing during and after a state-wide rubella immunization campaign in Rhode Island. This study confirmed the findings of earlier studies that immunization of children presents no hazard to pregnant women.

After reviewing the data on transmissibility of rubella vaccine virus at its most recent meeting in October, 1970, the Committee on Infectious Diseases of the American Academy of Pediatrics issued the following statement: "The Committee was reassured by two recent studies including approximately 200 rubella susceptible pregnant women who remained seronegative in the face of widespread community vaccination; in some instances such women were exposed to vaccine recipients in family, school and other situations of close contact."

Reinfection of Vaccinees. It is known that in virus infections which have been extensively studied, such as poliomyelitis and rubeola, immune persons when re-exposed may develop clinically inapparent reinfections. This phenomenon has also been noted with rubella. The reinfections tend to be subclinical, highly abbreviated from a virological point of view, and most common in persons with relatively low antibody levels.[4]

The Committee on Infectious Diseases of the American Academy of Pediatrics also spoke to this question in the following statement: "Although reinfection on exposure to natural rubella has been found to occur more frequently among vaccinees than in naturally immune persons, transmission of virus to susceptible contacts has not been demonstrated. Since these episodes of reinfection have not been accompanied by detectable viremia, it is unlikely that the fetus of a vaccine-immune woman would be infected."[7]

Conclusion

An effective vaccine is available to control rubella but it will require the cooperative efforts of all private and public medical groups to achieve significant results without undue delay. The immediate priority of all physicians and public health workers is to prevent the disastrous consequences of another rubella epidemic which is expected within the next few years. No one at this time can give any absolute assurance that the immunization of children will be completely successful or will be the primary method for the future, but no other alternative currently available would be effective in a short time. Continued surveillance of the rubella problem is essential and as more experience is accumulated the present public programs can be modified if necessary.

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